

## PDS Standards Reference Change Log

Version	Section	Change
3.1	1.1	PDS Data Policy added
	2.3	Reference coordinate standard expanded to support body-fixed rotating, body-fixed non-rotating, and inertial coordinate systems.
	2.4	Ring coordinate standard added.
	3.0	List of internal representations of data types moved to Appendix C
	3.2	EBCDIC_CHARACTER added to PDS Standard data types
	5.2.3	Minimal label option described
	6.3	Data set collection naming -- data processing level component made optional
	6.4	Data set naming -- added support for SPICE and Engineering, where no instrument component applies
	10.0, ALL	PDS use of UNIX/POSIX forward slash separator for path names. VMS-style bracket notation replaced.
	10.2.1	Required file names for catalog objects included
	12.5.4.2	PDS use of double quotes clarified
	13.2	Use of Primitive objects described
	14	New chapter -- Pointer Usage
	17	New chapter -- PDS Usage of N/A, UNK, and NULL
	19	Logical Volume organization added
	Appendix A	Primitive Objects added
	Appendix A	Header object -- required and optional keyword lists changed Container object -- Column no longer a required sub-object

Appendix B	Streamlined Catalog Object Templates with examples replace 3.0 set
Appendix C	New appendix containing internal representations of data types (moved from Chapter 3)
Appendix D	Outline and example for AAREADME.TXT added
Appendix E	Version 3.0 Acronyms and Abbreviations modified and moved to this Appendix. Spelling and Word Usage section deleted.
Index	The document now features an index.
ALL	No other substantive changes have been made to the standards since the release of Version 3.0. Throughout the document, clarifications have been made, typos corrected, some sections have been rearranged, and new examples have been supplied.

<b>Version</b>	<b>Section</b>	<b>Change</b>
3.2		Release Date: 7/24/95
	5.1.2	Label format discussion added Noted that values in labels should be upper case (except descriptions). Fixed examples in Appendix A.
	5.2.3, Appendix A	Noted that for data products using minimal labels, DATA_OBJECT_TYPE = FILE in the Data Set Catalog Template
	6	Added target IDs for DUST and SKY Added instrument component values SEDR and POS Noted that Data Set and Data Set Collection IDs and Names should be upper case. Fixed examples.
	8 and 19	Listed CALIB and GEOMETRY as recommended directory names (as opposed to required).
	8.2	SOFTWARE Subdirectory naming recommendation added
	9.1	Volumes may contain multiple versions of VOLINFO

- 9.2.1 Increased maximum line length in text file to 78 characters plus CR/LF
- 10.1 Clarified file name specification. Noted that file name must be upper case and that full stop character required
- 10.2 Added recommendation that file extension identify the data type of a file.  
Added .QUB as reserved file extension for spectral image qubes.  
Added SPICE file extensions to reserved file extension list.  
catalog pointer name and file name: SWINV.CAT  
Added LABINFO.TXT to list of required xxxINFO.TXT files.  
Added recommended xxx INFO.TXT file names for SOFTWARE subdirectories.
- 10.2.3 and 5.1 added note that detached label file (\*.LBL) should have the same base name as the associated data file
- 11.1.1 Added PDS Extended Attribute Record (XAR) policy
- 11.1.2 Added recommendation that CDs be premastered using single-session, single-track format.
- 11.1.3 Added section on Packaging Software files on a CD-ROM
- 14.1.2 Added new example of structure pointer
- 15 Added recommendation that for VAX/VMS-compatible CDs, fixed length and variable length files be an even number of bytes. Removed reference to VMS restriction to an even number of bytes in section 15.2
- 15.1 Removed discussion of use of BLOCK\_BYTES and BLOCKING\_TYPE (since this data element not in PSDD)
- 15.3 Added notation that CR/LF is required line terminator for PDS label and catalog files
- 15.5 Reworded first sentence.
- 17.2 Allow definition of numeric constants representing N/A, UNK, and NULL to be defined for use in an INDEX table.
- 18 replaced reference to PDS V1.0 with a general statement

19	Added SOFTWARE subdirectory recommendations
19	Recommend that an archive volume be based on a single version of the PDS standards. Volume organization guidelines added.
19.2	Clarified requirements for files & directories when logical volumes used
19.3	INDEX table standard update
19.3	use of axx- and bxx- prefixes in required file names clarified
19.4, Appendix A	fixed examples--Volume and Volume set names capitalized
19.5.1	Volume set ID formation rule modified.
Appendix A	updated COLUMN, BIT_COLUMN, and HISTOGRAM objects required and optional keyword lists to be consistent with Table 3.1
Appendix A	Added ALIAS and INDEX_TABLE objects
Appendix A	Added examples of COLUMN objects having ITEMS
Appendix A	Clarified use of ROW_SUFFIX_BYTES and ROW_PREFIX_BYTES for SPARE fields in Tables with fixed length records
Appendix A	Clarified the requirements for VOLUME objects for Logical volumes
Appendix A	Fixed examples using HEADER object to conform to current standard. Modified description of Header object to eliminate confusion..
Appendix B	Inventory, Software_Inventory and Target templates added
Appendix B	Removed incorrect example of use of Personnel template
Appendix D	INDXINFO.TXT and SOFTINFO.TXT outlines and examples added
Appendix D.1	Modified example of AAREADME.TXT to include rules on how pointer statements are resolved.

Appendix E and F	Added Appendix E - NAIF Toolkit Directory Structure. Acronyms and Abbreviations moved to Appendix F.
ALL	corrected typos, clarified text, added rationale for some standards, updated examples to conform to latest standards
Change Log	Version 3.1 change log updated--some items were missing

<b>Version</b>	<b>Section</b>	<b>Change</b>
3.3		Release Date: 6/1/99
	1.0	Added DVD as new medium
	1.3	Changed Version to 3.3
	1.6	Updated/corrected references
	1.7	Added reference to PDS web page
	2.0	Added definition for IAU Clarified text
	2.3	Corrected punctuation
	2.7	Fixed punctuation for references
	3.4	Corrected punctuation
	3.7	Corrected spelling and punctuation
	4.0	Added Section headers for Primary & Secondary Objects
	4.1	Corrected paragraph formatting
	5.1.2	Added paragraph about ASCII character set Added paragraph about Label Padding Fixed math in calculating start byte of 8th record Aligned keyword/values
	5.2.2	Corrected grammar
	5.2.3	Removed "" in the Data Set catalog template.
	5.3.1	Changed Version to 3.3
	5.3.2	Modified last paragraph
	5.3.3	Listed examples of primary and secondary objects
	5.3.3.2	Changed 'bottom' to 'following'
	5.3.4	Removed AMMOS as an example
	5.3.4.1	Removed SPACECRAFT_NAME as valid keyword
	5.3.4.3	Removed SPACECRAFT_NAME as valid keyword.
	5.3.5	Changed PDS has developed and continues to develop... Added example for a pointer (^DESCRIPTION)
	5.3.6	Aligned keyword/values Clarified statement
	5.3.7	Changed: needed for conformance
	6.0	Prioritized organizations that PDS works with
	6.1	Provided definition for Data Set Collection and removed MGN example.

	Corrected spelling (considerations) and punctuation
6.2	Added acronyms for data set name and identifier
6.3	Changed paragraph from future tense to past tense
6.4	Section 5 - comets
	Section 6 - added acronyms to list
	Section 6 - corrected spelling (ephemeris)
	Section 7 - corrected spelling (gravity)
	Section 8 - clarified version number rules
7.0	Updated paragraph
7.1	Clarified statements about date/time formats
7.2.1	Added PDS preference for convention
7.3.1	Corrected grammar
	Reformatted paragraph
7.3.2	Corrected grammar
	Updated paragraphs
8.1	Corrected grammar (standards directory)
	Added EXTRAS directory
	Added Browse and Data directory descriptions
8.2	Section 4 - Better examples of directory names
	Section 5 - Reformatted paragraph
	Section 8 - Corrected spelling and grammar
8.3	Changed to valid keywords
8.4	Corrected grammar (data are)
9.0 - 9.3.3	Complete rewrite of Documentation Standard
	Added HTML standards
10.0 - 10.1	Added ISO 9660 Level 2 description
	Added ";1" to Level 1 description
10.2.1	Clarified required file names paragraphs
	Added TARGET_CATALOG pointer to list
10.2.2	VOLDESC.SFD file becomes deprecated
10.2.3	Described detached label
	Corrected grammar (its)
10.2.4	Added extensions and changed SPICE extensions
	Corrected spelling (postscript) and grammar (data that have)
11.1.1	Changed chapter name
12.1	Aligned equal signs
12.1.1.1	Added reference
12.2	Reformatted paragraph
12.3	Spelling
12.3.1	Corrected punctuation (1.234E2)
12.3.1.2	Corrected value (16#+4B#)
	Reformatted paragraph
12.3.1.3	Corrected value (1.234E3)
12.3.2	Updated paragraphs
12.3.2.1	Clarified date format
12.3.2.3	Clarified paragraph

12.3.2.4	Changed year to 4 digits
12.3.2.5	Updated paragraph
12.3.2.5.1	Corrected value (1990-158T15:24:12z)
12.3.3.1	Corrected value ("::=")
12.3.4	Added examples
12.3.5	Corrected punctuation and grammar (units)
12.4	Corrected punctuation
12.4.1	Corrected grammar (the the) Aligned equal signs
12.4.2	Aligned equal signs
12.5.2	Reformatted asterisks to not be superscript Corrected value (60.15)
12.5.3.1	Corrected grammar (affect) Reformatted paragraphs
12.5.4	Corrected value (IO) Added valid quoted strings
12.5.4.1	Clarified paragraph
12.5.5	Reformatted asterisk to not be superscript Corrected spelling (eccentricity) Changed to valid keyword
12.5.6	Corrected value (removed 1st bracket "[") Changed to valid keyword
12.6	Reformatted paragraphs
12.7	Reformatted paragraphs
12.7.1	Corrected grammar (sections detail)
12.7.2	Corrected grammar ("is that are")
13.1	Added required keywords to definition
14.1.1	Corrected grammar (occurs)
14.1.2	Corrected punctuation Corrected value (^STRUCTURE) Changed paragraph numbering
14.2	Reformatted pointer rules
15.0	Reformatted paragraph and table
15.2	Changed paragraph numbering
15.3	Changed paragraph numbering
16.0	Corrected grammar
16.2	Clarified paragraph Changed case of #mark#
17.1	Changed case of title (and)
17.1.2	Corrected punctuation (information)
17.2	Corrected case of title (and)
18.0	Corrected SI Units (electricity potential, etc) Updated paragraph
19.1	Corrected grammar (volume types)
19.3	Corrected grammar (up to the) Corrected grammar (an SFDU)

	Corrected spelling (global)
	Updated Catalog and Index definitions
	Added description of the EXTRAS directory
	Added Preferred Method for supplying PDS catalog objects
19.4.1	Corrected grammar (data have been)
	Changed case of value (ID)
19.5	Corrected spelling (radiometry)
	Corrected value (VOLUME_SET_NAME)
	Corrected value (VOLUME_SET_ID)
19.5.1	Reformatted paragraph
19.7	Corrected case of value (IDs)
20.0 - 20.6	Complete rewrite of Zip Compression
Appendix A	Added URL to Cold Fusion pages
A.1	Updated definition for ALIAS
	Corrected spelling (subobject)
A.2	Added and changed Optional keywords
	Reformatted paragraphs
	Corrected spelling (the time)
A.3	Changed Optional keywords
	Corrected spelling (created)
A.5	Added TARGET to Optional Objects
	Clarified use of CATALOG.CAT
	Formatted paragraph
A.7	Formatted paragraph
	Changed Optional keywords
A.8	Updated paragraph
A.10	Changed case of keyword values to uppercase
A.11	Corrected grammar (on a)
	Corrected grammar (on the medium)
A.12	Removed incorrect statements
	Updated example
A.13	Changed Optional keywords
A.14	Removed a Required keyword
	Added Optional keywords
A.15	Changed value to keyword (GAZETTEER_TABLE)
	Corrected grammar (the breath & upper right)
	Added Optional Keywords section
	Added Optional Objects section
	Added trailing double quote to DESCRIPTION section
A.16	Corrected paragraph to reflect proper file name
	Changed value to be enclosed in double quotes
A.18	Added Required and Optional Keywords and Objects sections
A.19	Added BAND_NAME keyword
	Added Optional keyword
	Changed values to be keyword (CHECKSUM)
	Changed values to be keyword (SCALING_FACTOR)

A.20	Changed paragraphs Changed case of keyword values to uppercase
A.21	Reformatted paragraphs Removed Optional Keyword Added Optional Objects Corrected example (see additional example in A.27.1)
A.23	Added example for CORE_ITEM_TYPE Corrected FILE_RECORDS to be accurate Corrected invalid keyword (SUB_SOLAR_AZIMUTH)
A.24	Corrected grammar (data that vary)
A.26	Corrected grammar (data are)
A.27	Corrected punctuation (The Toolkit) Corrected grammar (meta-data which are) Updated section numbers to reflect location (spares) Repaired examples (byte lengths)
A.28	Line length to 72 chars Added Required and Optional Objects Repaired example
A.29	Updated Optional keyword Changed case of keyword values to uppercase
Appendix B	Changed paragraph Changed text description length to be 80 characters from 72 Added text formatting standards
B.1	Corrected punctuation Repaired example
B.2	Reformatted paragraph Reformatted and repaired example
B.3	Corrected spelling (DESCRIPTION) Reformatted paragraph Reformatted and repaired example
B.4	Corrected spelling (description & instrument) Reformatted paragraph Reformatted and repaired example
B.5	Corrected grammar (properties of the) Reformatted paragraph Reformatted and repaired example
B.6	Repaired example
B.7	Reformatted paragraph Reformatted and repaired example
B.8	Repaired example
B.10	Corrected spelling (package) Replaced example of SOFTWARE_INVENTORY template
B.11	Corrected grammar (target catalog) Corrected grammar (SURFACE_GRAVITY) Repaired example
Appendix C	Minor corrections throughout text

C.5	Corrected spelling (exponent-as-stored)
C.10	Corrected spelling (imaginary)
Appendix E	Corrected sentence (source code for) Corrected spelling (spacit) Corrected grammar (These data are) Corrected punctuation
Appendix F	Corrected CD-WO nomenclature Added DE (Data Engineer) Corrected spelling (Principal)
Appendix G	Added SAVED Data as new section

Version	Section	Change
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3.4		Release Date: 06/15/2001
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Technical editing of the entire document (Chapters 1-20, Appendices A-G) was performed by Anne Raugh under contract to JPL. This editing focused on correcting awkward language, making examples consistent with the text, clarifying apparent internal inconsistencies, and in general ensuring a more readable document. Substantive changes to the standards themselves were specifically prohibited. Document changes made by Raugh were reviewed by Lyle Huber (ATMOS) and Ron Joyner (CN). Cases in which the intention of the original document could not be determined by the above team were referred to Steve Hughes (CN), who acted as both historian and final arbiter.

On May 04, 2001, Ann Raugh, Richard Simpson, Lyle Huber, Steve Hughes, and Ron Joyner met at New Mexico State University to discuss and arbitrate the final set of changes to be incorporated into this document.

Version	Section	Change
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3.5		Release Date: 10/15/2002
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19.4.1	Changed length of VOLUME_ID from 9 chars to 11 chars
19.5.1	Changed formation rule for VOLUME_SET_ID
B.1.6	Modified to include ARCHIVE_STATUS keyword
B.7.1	Modified to include ARCHIVE_STATUS keyword
B.31	Modified to include DATA_SET_TERSE_DESC keyword Amended Reference section to include more definitive language on what is appropriate to cite, what is not, and how to cite each type of reference.

Version	Section	Change
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3.6		Release Date: 08/01/2003
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3.1	Modified to include FIELD data element
3.2	Modified to include FIELD data element
3.8	Modified to include SPREADSHEET object

4.0	Modified to include SPREADSHEET as primary object
5.5	Added definition for Locally Defined Data Elements
5.5.1	Added Justification for Locally Defined Data Elements
5.5.2	Added Identification for Locally Defined Data Elements
5.5.3	Added Review and Use of Locally Defined Data Elements
7.3.1	Modified 1 <sup>st</sup> two paragraphs to clarify GMT/UTC relationship
7.4(6)	Added Note for Greenwich time
10.2.3	Modified list to include CSV as reserved file extension
12.2.3	Modified use of Colon in assignment statements (namespace)
12.4.2	Modified to include namespace_identifier:element_identifier
12.6	Modified to include namespace_identifier:element_identifier
19.3.3.2	Modified to include Optional use of Data Dictionary Files
A.2.5	Removed 'Z' from time value
A.13.2.1	Added Note for PARMS as alias to PARAMETERS group
A.14	Added FIELD object (sub-object of SPREADSHEET)
A.15 thru A.26	Renumbered sections (the old A.14 became A.15, etc)
A.15.5	Removed 'Z' from time value
A.17.5	Removed 'Z' from time value
A.25	Modified UTC / GMT for LEAPSECONDS
A.27	Added SPREADSHEET object
A.23.4	Removed 'Z' from time value
A.24.5	Removed 'Z' from time value
A.25.5	Removed 'Z' from time value
A.26.5	Removed 'Z' from time value
A.28 thru A.30	Renumbered sections (the old A.27 became A.28, etc)
A.28.4.1	Removed 'Z' from time value
A.28.5.1.3	Removed 'Z' from time value
B.1.6	Modified to include CITATION_DESC data element
B.7.1	Modified to include CITATION_DESC data element
B.7.5.3	Modified to include CITATION_DESC formation rule
B.7.5.4	Renumbered from B.7.5.3

Version	Section	Change
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3.7		Release Date: 03/20/2006
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This update of the document focused almost entirely on updates to standards in response to approved Standards Change Requests (SCRs). A few typographical errors were also fixed.

1.7	Changed hyperlink ( <a href="http://pds.jpl.nasa.gov">http://pds.jpl.nasa.gov</a> ) to regular text format.
3	Corrected chapter title in header on even numbered pages by changing "Definitions" to "Values".
4	Corrected chapter title in header by changing "Data Products" to "Data Objects and Products".
4	Added "QUBE" to list of primary data objects.
5.2.1	Updated Figure 5.2 to include DD_VERSION_ID in response

5.2.2	to SCR 3-1021; also added LABEL_REVISION_NOTE. Updated Figure 5.3 to include DD_VERSION_ID in response to SCR 3-1021; also added LABEL_REVISION_NOTE and corrected a few typographical errors ("FILE_RECORD" to "FILE_RECORDS", "Detached" to "detached", spaces inserted before and after "/", alignment of bullets corrected).
5.2.3.1	Changed "identifier" to "identifiers".
5.2.3.2	Changed "identifier" to "identifiers". Modified Figure 5.4 to match format of Figures 5.2 and 5.3; added DD_VERSION_ID in response to SCR 3-1021 and added LABEL_REVISION_NOTE.
5.3.1	Added new paragraph describing DD_VERSION_ID and added keyword to two examples in response to SCR 3-1021.
7.3.2	Changed point 6 to disallow alternate zones in response to SCR 3-1023.
8.2	Modified point 2 to clarify ISO 9660 Level 2 usage in response to SCR 3-1006.
8.3	Modified first paragraph from "Level 1" to "Level 2" and "eight characters" to "31 characters" in response to SCR 3-1006.
10	Deleted "only" from third paragraph in response to SCR 3-1006.
10.1.1	Removed final sentence of first paragraph in response to SCR 3-1006.
10.1.2	Modified first paragraph from "with one exception:" to "with the exception that" and fourth paragraph from "file name specification" to "file and directory name specifications" in response to SCR 3-1006.
10.2.3	Updated IMQ definition to indicate exception for JPEG 2000 images, and added JP2 definition in response to SCR 3-1003.
12.4.5	Removed point 2 which precluded the use of GROUPS within OBJECTs in response to SCR 3-1037. Fixed typographical error in point 16 ("AnEND" to "An END")
12.7.3	Modified point 14 to provide additional clarification and reference to chapter 7 in response to SCR 3-1023. Fixed typographical error in point 16 ("AnEND" to "An END")
13	Fixed header by adding "/ Groups" to chapter title.
13.2	Removed page break before 13.2.
13.2.1	Removed point 2 which precluded the use of GROUPS within OBJECTs in response to SCR 3-1037.
20	Chapter 20 (Zip Compression) is now included as section 6 of Appendix I (Data Compression Formats), in response to SCR 3-1003.
A	Corrected spelling of "SHREADSHEET" in chapter contents.
A.25	Added new section describing SPECTRAL_QUBE object in response to SCR 3-1037.
A.26-A31	Appendices A.25 through A.30 renumbered in response to SCR 3-1037.
A.28	Corrected spelling of section title from "SHREADSHEET" to "SPREADSHEET".
B.1.3	Modified to include DATA_SET_MISSION catalog object in response to SCR 3-1028.
B.1.6	Modified to include DATA_SET_MISSION catalog object in

- response to SCR 3-1028. Updated example of DATA\_SET catalog object to include ABSTRACT\_DESC in response to SCR 3-1026.
- B.7.1 Updated DATA\_SET\_INFORMATION catalog object to include required keyword ABSTRACT\_DESC in response to SCR 3-1026.
- B.10 Added DATA\_SET\_MISSION catalog object in response to SCR 3-1028.
- B.15 Added a sentence regarding multiple instrument hosts to the first paragraph in response to SCR 3-1024.
- B.15.5 In the second sentence, change “A” to “An”.
- B.32.5.6.1 Modified description of author list in REFERENCE\_DESC in response to SCR 3-1005.
- D Changed chapter contents from hyperlinks to plain text.
- E Fixed header on even-numbered pages by moving page number to left side and chapter title to right side.
- H.1 Added new section describing BAND\_BIN group in response to SCR 3-1037.
- H.2 Added new section describing BAND\_SUFFIX group in response to SCR 3-1037.
- H.3 Added new section describing LINE\_SUFFIX group in response to SCR 3-1037.
- H.4 Renumbered from H.1 in response to SCR 3-1037.
- H.5 Added new section describing SAMPLE\_SUFFIX group in response to SCR 3-1037.
- I Added Appendix I (Data Compression Formats) in response to SCR 3-1003. New appendix includes former chapter 20 (Zip Compression).

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